



## Opportunity for HSPA and HSPA+

HSPA+ & LTE Executive Briefing, Jan 27, 2009

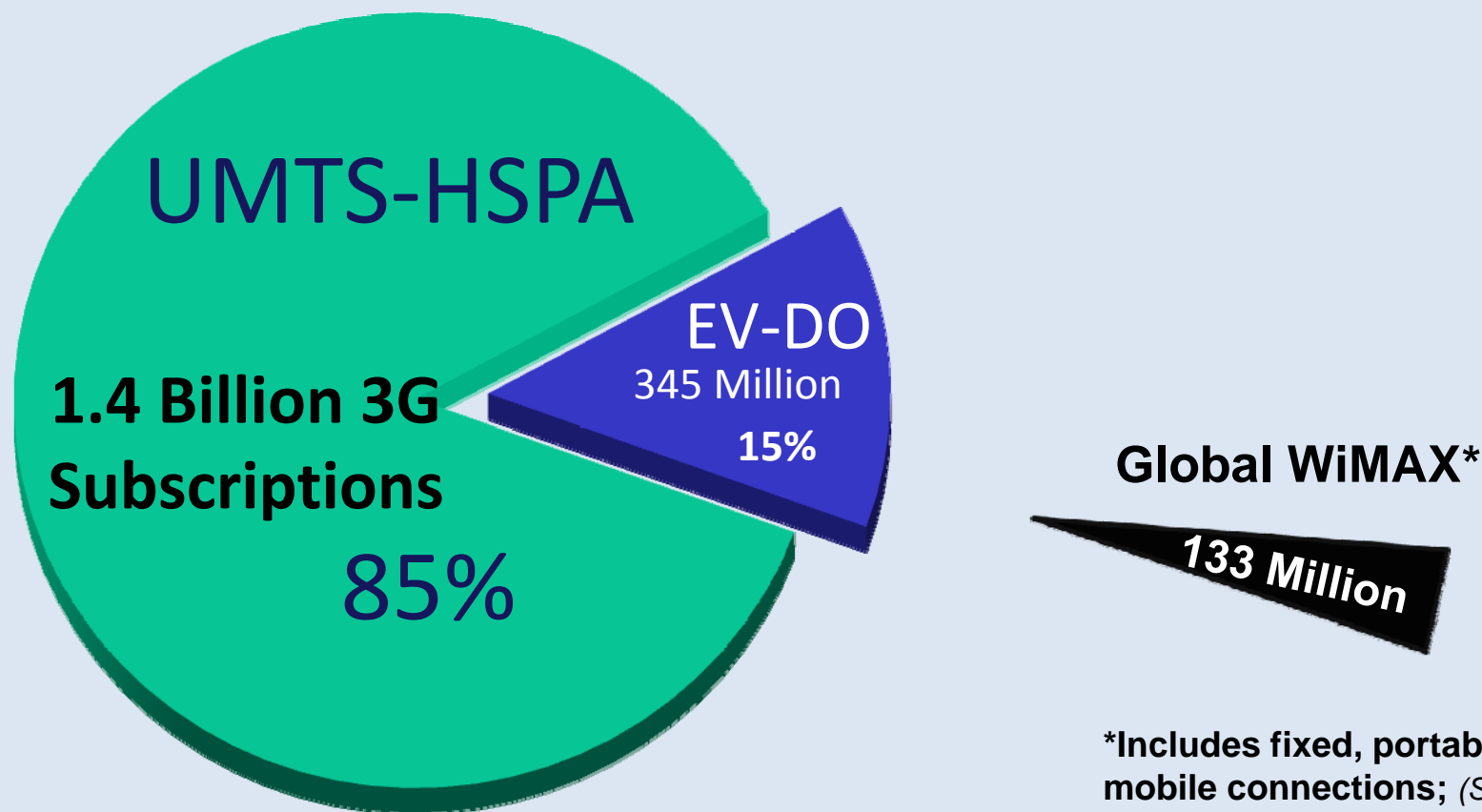
**Neville Ray**, SVP, Engineering and Operations, T-Mobile USA  
Chairperson, 3G Americas

# Agenda

- Dynamics and Trends in Mobile Data Services
- The Benefits of HSPA & HSPA+
  - Subscriber and device growth
  - Compelling data speeds
  - Efficiency gains and lower cost of delivery
  - Evolutionary path
- Summary

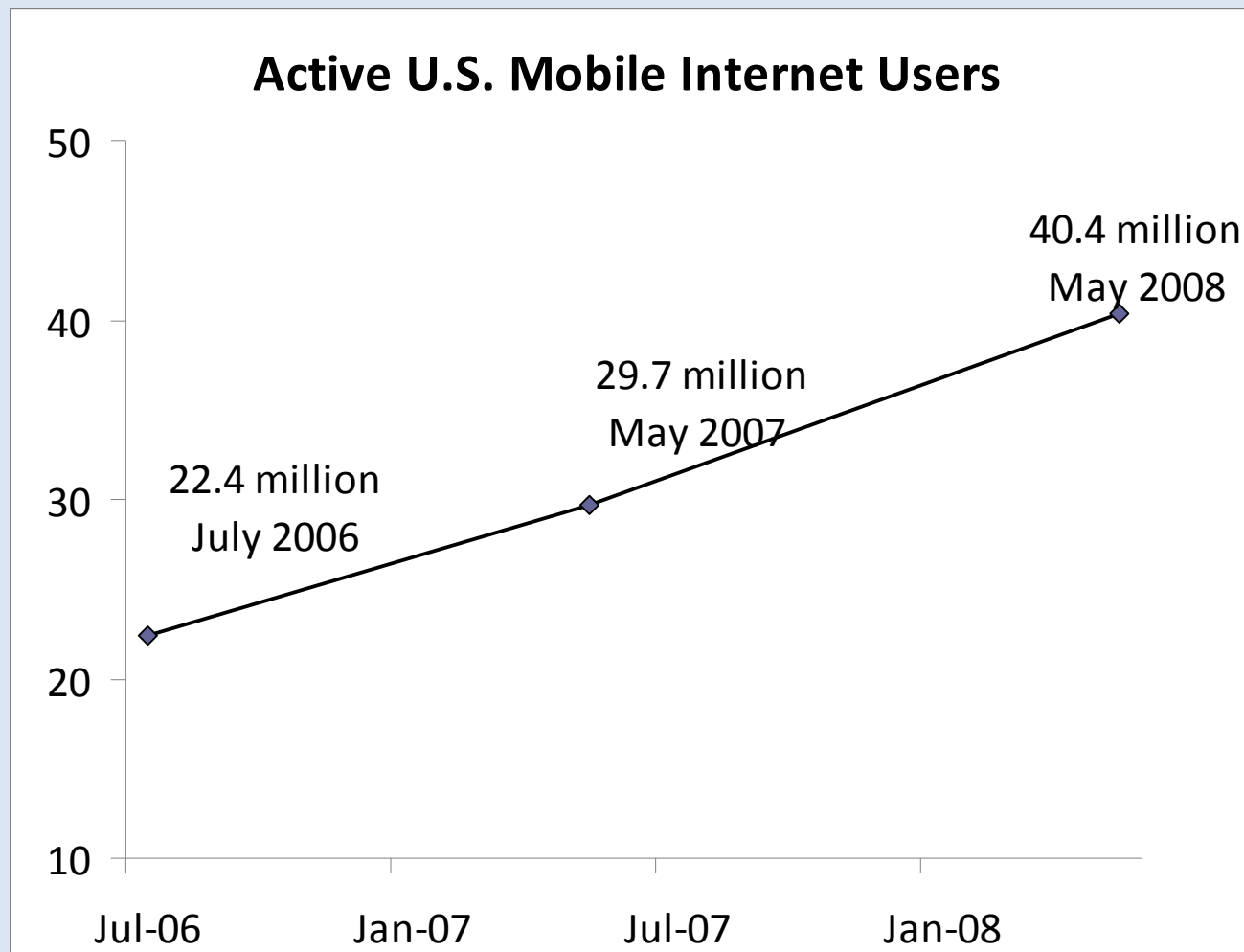
# Mobile Broadband Subscriber Forecast

1.63B 3G Subscriptions (worldwide) by 2012



\*Includes fixed, portable and mobile connections; (Source: WiMAX Forum, October 2008)

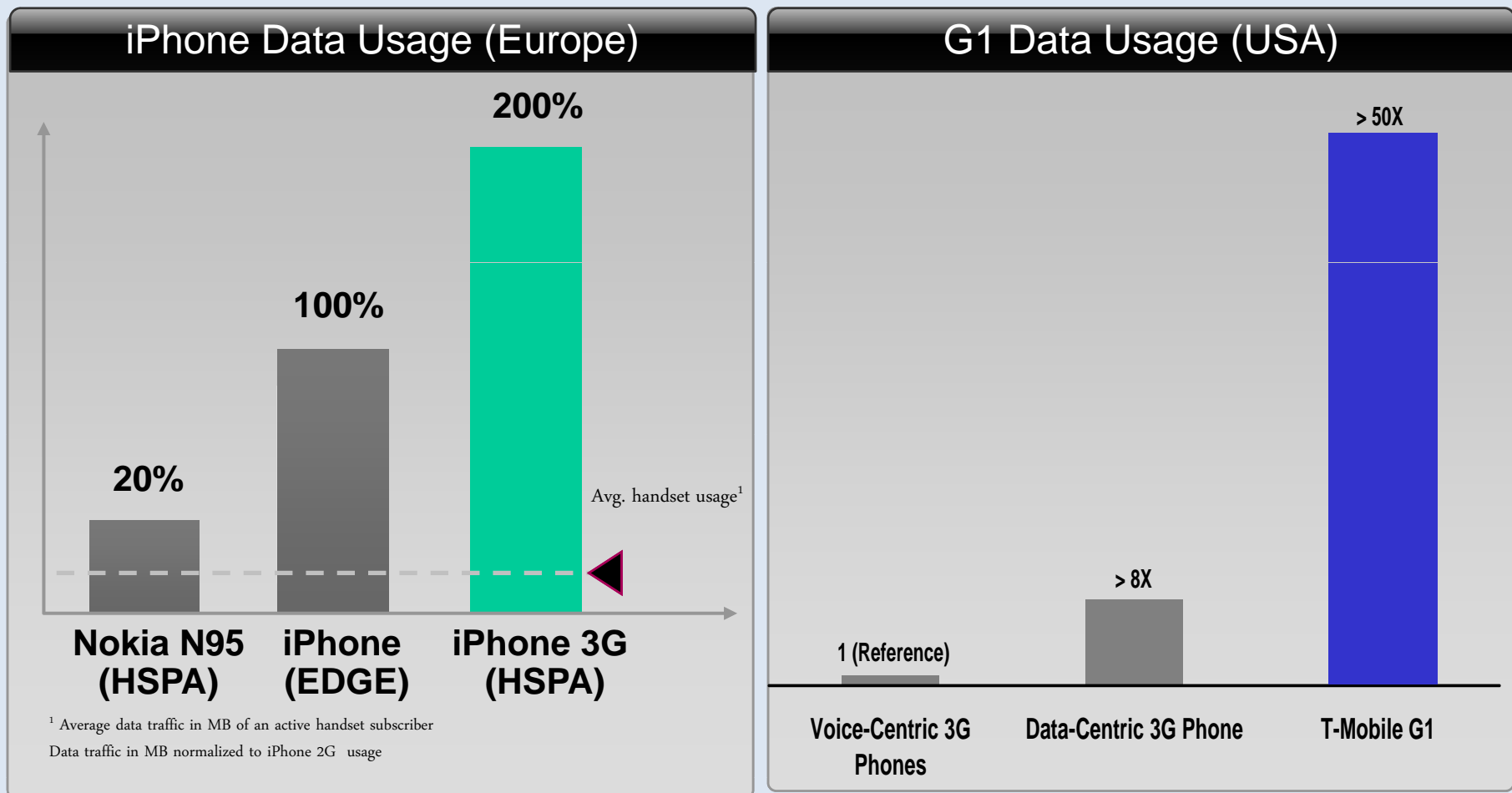
# Going Mobile with Data



Source: Nielsen Mobile

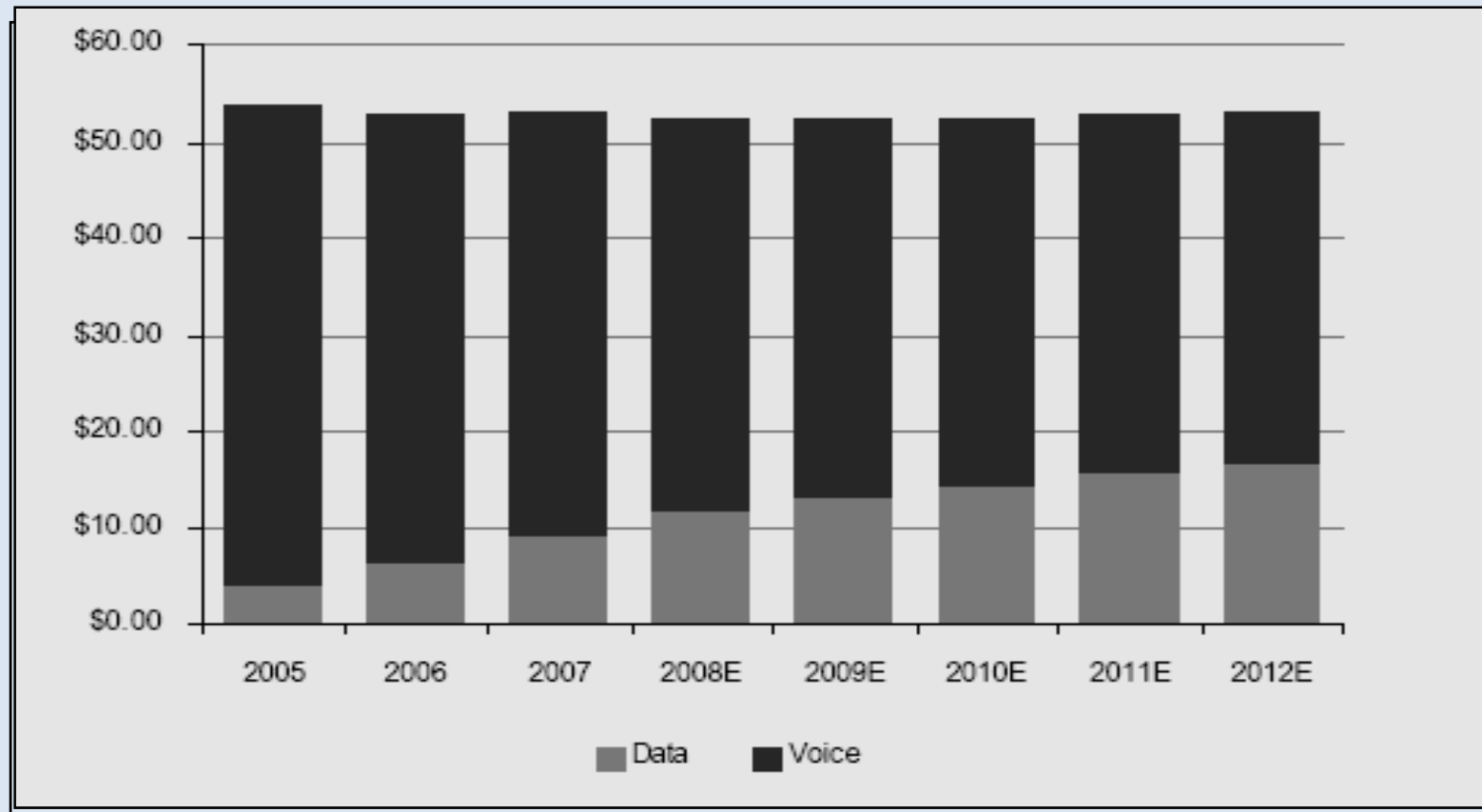
# Dynamics and Trends in Mobile Data

## Iconic Devices Spur Dramatic Data Usage Growth



# Data ARPU on the Upswing

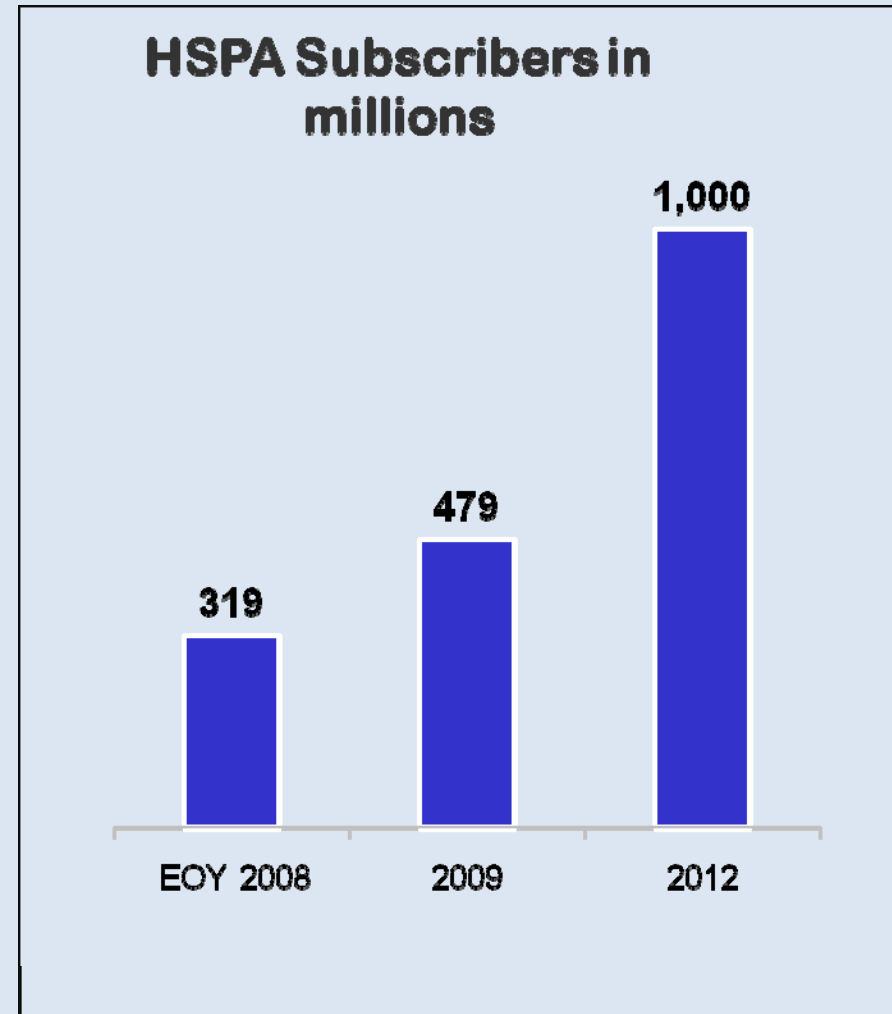
Top 5 US Carriers



Source: Bank of America/Merrill Lynch, Jan 2009

# HSPA Subscriber Growth

HSPA will compete with any/all mobile wireless technologies available today and in the near future



# HSPA Ecosystem

- 270 commercial UMTS/HSPA networks in 115+ countries
- Over 286 million 3G UMTS/HSPA subscriptions worldwide
- 1106 HSDPA devices from 127 suppliers



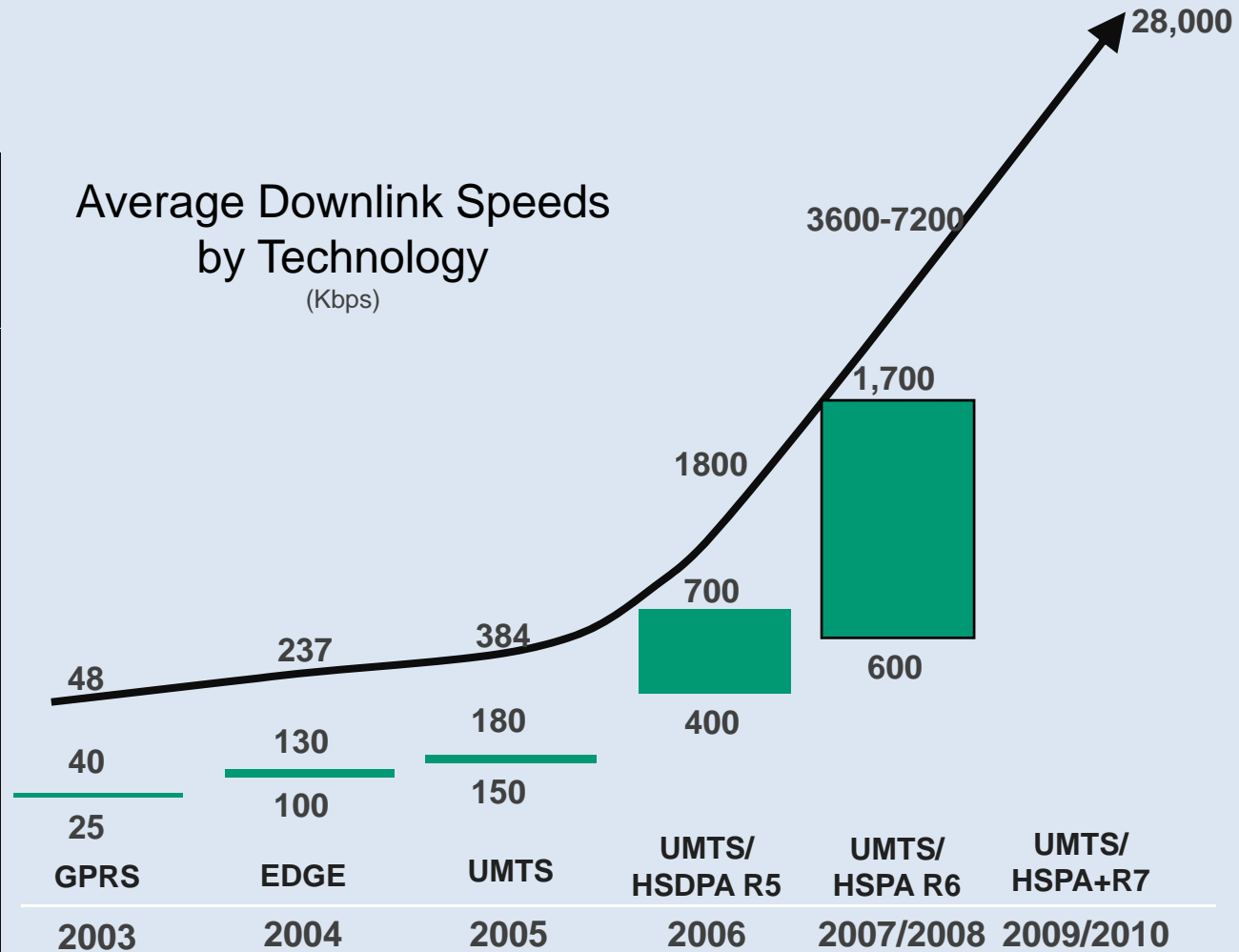


# Compelling Data Speeds

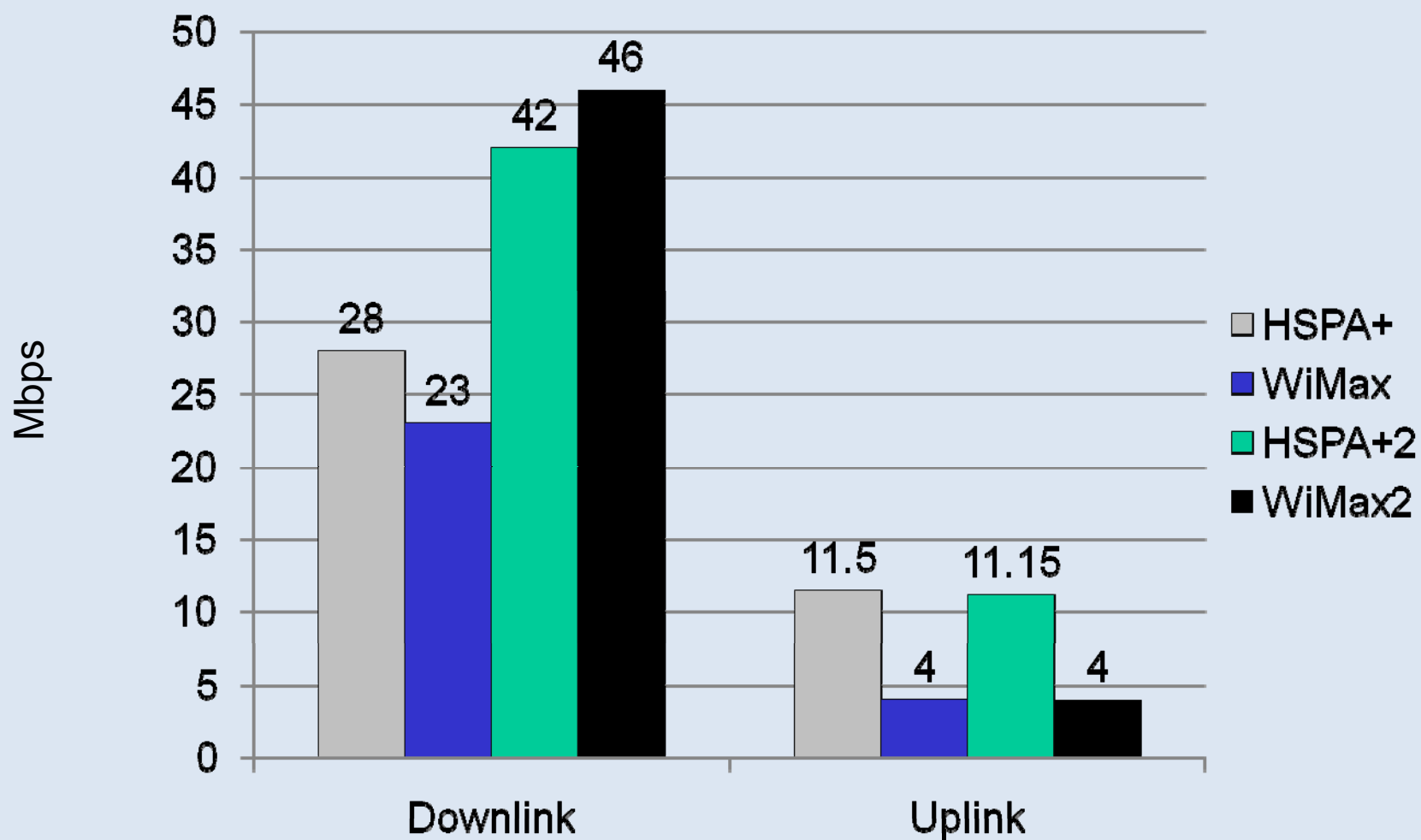
## Technology Road Map

- Peak speeds today provide a DSL-like experience
- With HSPA R7 peak speeds of up to 28 Mbps

Average Downlink Speeds by Technology (Kbps)



# HSPA+, WiMax Speeds Comparable

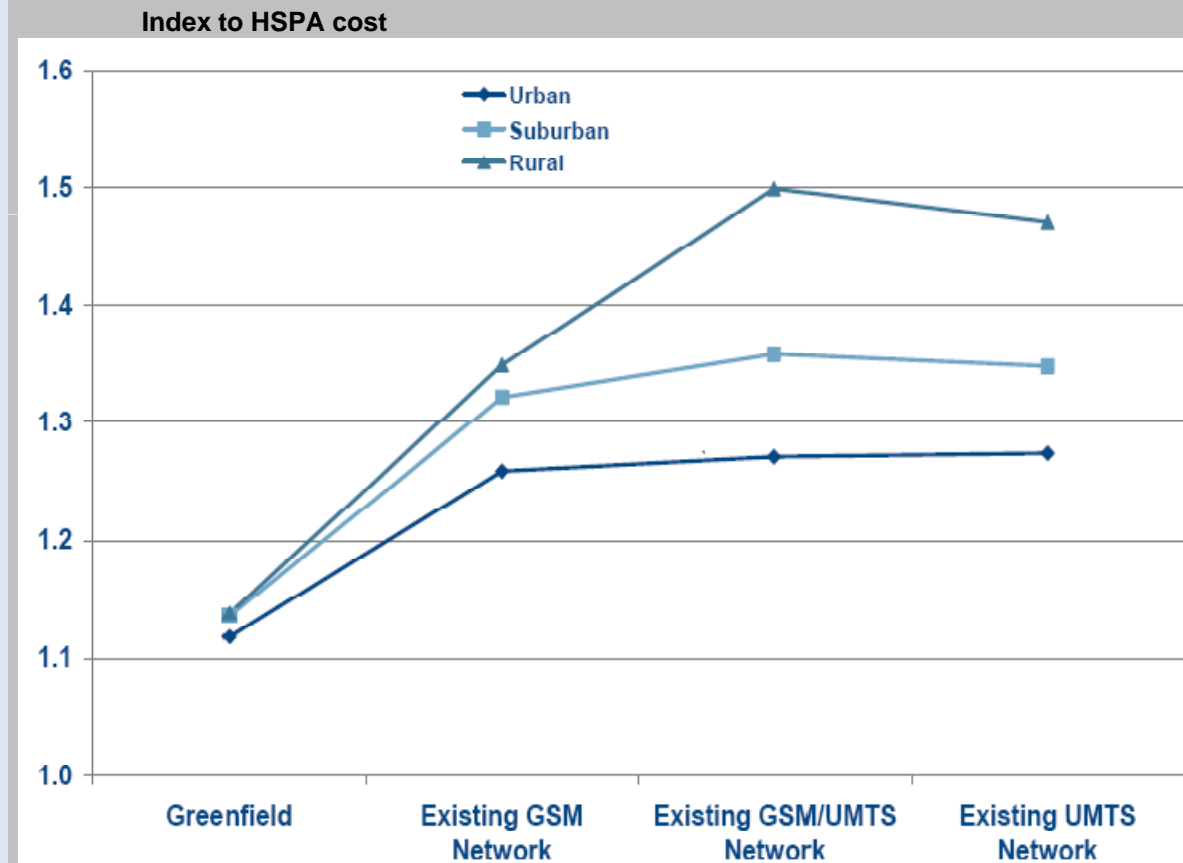


Source: EDGE, HSPA and LTE, Broadband Innovation, Sep 2008, Rysavy Research, 3G Americas

# Lower Cost of Delivery

- HSPA uses fewer cell sites vs. Mobile WiMAX

CAPEX Ratios (WiMAX with PUSC v. HSPA)



# Efficiency Gains & Lower Cost of Delivery

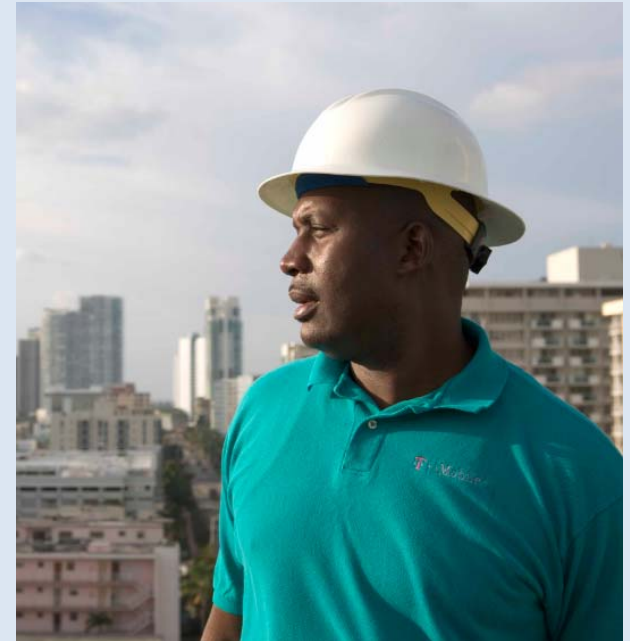
- Customers benefit without major infrastructure changes
- Limited incremental CapEx/OpEx
- Reduced latency
- Protects and promotes operators' investments
  - HSPA integrates seamlessly with today's UMTS networks
  - HSPA+ can be deployed on the same spectrum
  - HSPA+ is a simple upgrade to current HSPA networks

# Migrating to HSPA from EDGE

3G

T-Mobile

- 15 months total for 15,000 sites
- 130 US cities across 27 major markets
- 100M+ covered pops
- Limited upgrades to existing sites
- Limited upgrades for HSPA+



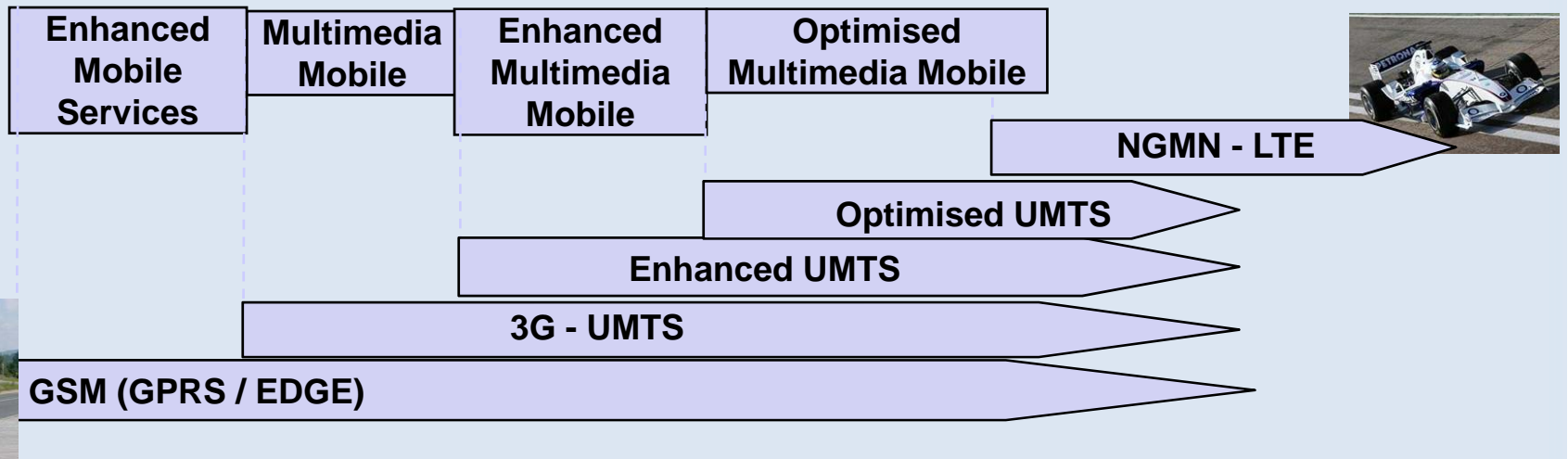
- Over 62% of commercially launched HSDPA operators have also launched EDGE
- Over 82% of HSDPA devices also support GSM/EDGE

*(Source: GSA survey, December 23, 2008)*

# A Rich Evolutionary Path

<b>2000 - 2003</b>	<b>2003- 2005</b>	<b>2005 - 2006</b>	<b>2007 - 2009</b>	<b>2010+</b>
32 - 128kbps	64 – 384kbps	0.384 - 4 Mbps	0.384 - 7 Mbps	30 (avg) to 170 (peak) Mbps

<b>GSM GPRS/ EDGE</b>	<b>UMTS R99, 1st versionl of 3G</b>	<b>HSDPA Downlink Enhanced 3G</b>	<b>HSPA / HSPA+ Downlink / Uplink Enhanced 3G</b>	<b>NGMN - LTE Broadband radio, IP based architecture Future Wireless Cellular</b>
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# Summary

- The industry is heavily committed to HSPA
- The ecosystem is thriving
- HSPA can evolve to HSPA+ to meet the advanced wireless needs of customers
- 3G is more than capable of delivering the bandwidth customers need today
- Emerging LTE technologies provide us with a clear evolution path for the future



**Thank you!**

**HSPA+ & LTE Executive Briefing**

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Chairperson, 3G Americas

[www.3gamericas.org](http://www.3gamericas.org)